

CME 101 and Introduction to Chemical & Molecular Engineering

Credits and Contact Hours: 3 credits; 1 hour: 20 min

Course Instructor: William J. Calvo, Ph.D.

Text(s): K. A. Solen, J. N. Harb, Introduction to Chemical Engineering: Tools for Today and Tomorrow, 5th ed., John Wiley & Sons, 2011

Specific course information

a. Brief description of the Content of the course (catalog description) This first required course for the Chemical & Molecular Engineering (CME) Program major is designed to integrate the student into the University community, College of Engineering, and the CME Program with a focus on personal and institutional expectations. Emphasis is on modern day interdisciplinary chemical engineering profession requiring teamwork and the role of chemical engineers in balancing professional growth with issues of societal impact.

b. Pre- or Corequisite(s) CME 304

c. Required course in the Program

Specific goals for the course:

a. Upon completion of this course the student shall have been: (1) introduced to the role of math, engineering, and science in chemical engineering field, (2) introduced to modern-day industries that employ chemical engineers and industry expectations, (3) introduced to interdisciplinary environment, teamwork, good communication skills, and a need for lifelong learning, (4) introduced to leading scientists engaged in chemical engineering research and, (5) emphasized on the importance of balancing professional growth with ethical and societal issues.

b. Outcomes addressed are a, b2, d, f, g, h, i and j.

b. Criterion 3 a-k: Outcomes	% contribution
a. Ability to apply knowledge of math, engineering, and science	5%
b2. Ability to analyze and interpret data	5%
d. Ability to function on multi-disciplinary teams	10%
f. Understanding of professional and ethical responsibility	15%
g. Ability to communicate effectively	20%
h. Broad education	15%
i. Recognition of need and ability to engage in life-long learning	15%
j. Knowledge of contemporary issues	15%
	100%

Brief list of topics to be covered (including exams/quizzes)*:

Week 1: Introduction and Overview

Week 2: What is Chemical Engineering? The Chemical Engineering discipline

Week3: Chemical Processing; Process Flow Diagrams

Week4: Solving Engineering Problems; Ethics in Chemical Engineering

Week 5: Engineering Teams and Teamwork

Week 6: Describing Physical Quantities/Units; Process Variables

Week 7: Material Balances

Week 8: Midterm Exam

Week 9: Spreadsheets

Week 10: Fluid Mechanics

Week 11: Mass Transfer

Week 12: Reaction Engineering

Week 13: Process Control

Week 14: Economics

Week 15: Final Exam

**Numerous guest speakers (almost one per week) also incorporated in the syllabus*